Claims: This listing of claims will replace all prior versions, and listings, of claims in the application

Listing of claims:

1. (Currently Amended) A method for making a catalyst comprising the steps of:

forming a silica component, wherein the silica component is a silica hydrogel;

washing said silica ~~component~~ hydrogel;

contacting said silica ~~component~~ hydrogel with an aqueous, alkaline bath comprising a catalytic metal selected from the group consisting of an alkali metal and an alkaline earth metal to impregnate said silica ~~component~~ hydrogel with said catalytic metal to form an activated silica ~~component~~ hydrogel; and

drying said activated silica ~~component~~ hydrogel to form said catalyst.

2. (Original) The method in accordance with claim 1, wherein said alkaline bath has a pH of between about 7.5 and 10 at the end of the metal impregnation.

3. (Original) The method in accordance with claim 2, wherein said alkaline bath has a pH of between about 8 and 9.5 at the end of the metal impregnation.

4. (Previously Presented) The method in accordance with claim 1, wherein said alkaline bath further comprises a salt of said catalytic metal and ammonium hydroxide.

5. (Original) The method in accordance with claim 4, wherein said catalytic metal is cesium and said salt is cesium carbonate.

6. (Previously Presented) The method in accordance with claim 1, wherein the step of forming said silica hydrogel comprises mixing an alkali metal silicate with a mineral acid to form a hydrosol and allowing said hydrosol to set.

7. (Currently Amended) The method in accordance with claim 1, wherein said silica ~~component~~ hydrogel comprises a co-gel and the step of forming said co-gel

comprises combining an alkali metal silicate, a mineral acid, and a source of a second metal to form a hydrosol and allowing said hydrosol to set.

8. (Original) The method in accordance with claim 7, wherein the combining step comprises first mixing said mineral acid with said source of said second metal to form a mixture then combining said alkali metal silicate with said mixture.

9. (Original) The method in accordance with claim 7, wherein said second metal is selected from the group consisting of zirconium, titanium, aluminum, and Fe.

10. (Original) The method in accordance with claim 9, wherein said second metal is zirconium and said source of zirconium is zirconium orthosulfate.

11. (Currently Amended) The method in accordance with claim 1, wherein the washing step comprises acidifying said silica ~~component~~ hydrogel and then washing said acidified silica ~~component~~ hydrogel with acidified water.

12. (Currently Amended) The method in accordance with claim 11, wherein the pH of said acidified silica ~~component~~ hydrogel is about 1.5 to 2.5, and the pH of said acidified water is about 2.5 to 4.

13. (Currently Amended) The method in accordance with claim 1, wherein the washing step comprises washing said silica ~~component~~ hydrogel with an aqueous ammonium sulfate solution then with neutral water.

14. (Currently Amended) The method in accordance with claim 1 further comprising, prior to the washing step, heating said silica ~~component~~ hydrogel in an alkaline hydrothermal solution.

15. (Original) The method in accordance with claim 1 further comprising calcining said dried catalyst.

16. (Original) The method in accordance with claim 1, wherein said alkaline bath further comprises ammonium hydroxide.

17. (Original) The product made by the process of claim 1.

18. (Currently Amended) A method for making a catalyst comprising the steps of:

combining an alkali metal silicate, a mineral acid, and a source of zirconium to form a hydrosol and allowing said hydrosol to set to form a co-gel;

washing said co-gel;

contacting said co-gel with an aqueous, alkaline bath comprising cesium to impregnate said co-gel with said cesium to form an activated silica ~~component~~ co-gel, wherein said bath has a pH between and 8 and 9.5 at the end of the metal impregnation; and

drying said activated silica ~~component~~ co-gel to form said catalyst.

19. (Original) The product made by the process of claim 18.

20. (Previously Presented) The method in accordance with claim 1, wherein said catalytic metal is an alkali metal.

Remarks/Arguments:

Claims 1-20 were rejected in the Office Action dated June 2, 2004 (hereinafter "Office Action"), and claims 1-20 remain pending. Claims 1, 7, and 11-14 have been amended to more specifically refer back to the silica hydrogel, and claim 18 has been amended to more specifically refer back to the silica co-gel.

Rejections based upon 35 U.S.C. § 103

The Office Action rejects claims 1-20 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,426,082 issued to Marsden (hereinafter the " '082 patent") or U.S. Patent No. 5,369,071 issued to Degnan et al. (hereinafter the " '071 patent"). Specifically, the Office Action states that the '082 patent teaches a method of making an olefin polymerization catalyst from a silica co-gel and at least one other metal oxide, and the '071 patent teaches a

method of making a catalyst composition from a hydrogel at a basic pH containing alkali and alkaline earth metal cations, aluminum oxide and silicon oxide. The applicant respectfully traverses these rejections and submits the following arguments in support of patentability.

Amended claim 1 recites "[a] method for making a catalyst comprising the steps of: forming a silica component, wherein the silica component is a silica hydrogel; washing said silica hydrogel; contacting said silica hydrogel with an aqueous, alkaline bath comprising a catalytic metal selected from the group consisting of an alkali metal and an alkaline earth metal to impregnate said silica hydrogel with said catalytic metal to form an activated silica hydrogel; and drying said activated silica hydrogel to form said catalyst." Neither the '082 patent or the '071 patent disclose or teach a process for making a catalyst that includes impregnating the silica hydrogel with an alkali metal or an alkaline earth metal.

The'082 Patent

The '082 patent provides a method comprising the steps of (1) providing an aqueous composition of hydrogel formed from a silica co-gel and at least one other metal oxide; (2) washing the composition, if the composition contains alkali metal ions, until no more than 0.1% by weight of the alkali metal remains; (3) ageing the composition; (4) exchanging water for an organic liquid to produce a slurry; and (5) spray drying the slurry (column 3, lines 49-68). The Office Action states that the '082 patent method "includes aqueous hydrogel and catalytic amounts of alkali metal ions, mineral acid and activating []." The '082 patent actually teaches away from a hydrogel composition containing catalytic amounts of alkali metal ions. Specifically, the '082 patent requires that the alkali metal content be reduced to not more than 0.1% by weight. The '082 patent effectively treats alkali metal as an undesired impurity, rather than a catalytic component. In contrast, claim 1 of the present invention specifically recites contacting the silica component with an aqueous, alkaline bath comprising an alkali metal or an alkaline earth metal to impregnate the silica component with a catalytic metal to form an activated silica component.

The Office Action states that, although the '082 patent does not disclose impregnation of the silica with an alkali or alkaline earth metal, this step is an inherent feature of the '082 patent because claim 10 teaches the presence of an alkali metal. Claim 10 of the

'082 patent recites "[a] method according to claim 1, wherein the cogel contains, as the said at least one other metal oxide, at least one of TiO_2, Al_2O_3, ZrO_2 and MgO." While there is no alkali metal disclosed, Mg is an alkaline earth metal; however, in the '082 patent, the MgO is disclosed as a metal oxide for forming a co-gel with silica. Regardless of whether MgO actually forms a co-gel with silica, this teaching in no way renders the step of impregnation with an alkali or alkaline earth metal obvious because if the MgO does form a co-gel with silica, as suggested by the '082 patent, the magnesium is in a different form than the catalytic alkaline earth metals of the present invention. Specifically, the MgO of the '082 patent is incorporated in the framework structure (according to the definition of co-gel), whereas the catalytic metals of the present invention are ion-exchanged onto the silica hydrogel surface. Accordingly, impregnating alkaline earth metals on the surface of a silica hydrogel is not an inherent step of a reference disclosing a silica co-gel composition with an alkaline earth metal oxide as a component of the co-gel.

Further still, since the only disclosure of magnesium is as a component of the co-gel, it cannot be used to satisfy the limitation of the catalytic metal which is used in the preliminary step of forming the silica hydrogel. In other words, claim 1 requires that the magnesium (or more generally an alkali metal or an alkaline earth metal) be introduced after the formation of the silica hydrogel. On the other hand, as a component of the co-gel, the '082 patent contemplates adding the magnesium prior to the silica hydrogel is actually formed. Thus, the '082 patent fails to anticipate the claimed invention and, in fact, implicitly discloses a sequence of method steps different from that required by the claimed invention.

To establish inherency, the evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill in the art. MPEP §§ 2163.07(a) and 2112. In this case, in order to sustain a 37 C.F.R. § 103 rejection, evidence must make clear that a step of contacting a silica hydrogel component with an aqueous, alkaline bath comprising a catalytic alkali or alkaline earth metal to impregnate the silica hydrogel component with the catalytic metal is necessarily present in the method described in the reference. As explained above, the presence of a metal oxide as a component of a silica co-gel does not "make clear" that an impregnation step occurred as there is no catalytically available metal on the silica co-gel

surface. In fact, there is no implication that a silica co-gel formed with alkali or alkaline earth metals would be impregnated with alkali or alkaline earth metals at all. Therefore, impregnation of a catalytic metal is not inherent from the disclosure of a silica metal oxide co-gel.

In order to maintain an obviousness rejection by relying upon the theory of inherency, the examiner "must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied art." MPEP § 2112 citing *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original). As explained above, aspects of the present invention are not disclosed, inherently or otherwise by the '082 patent, and the examiner has not set forth any facts or reasoned explanation supporting a determination that the method steps of the present invention necessarily flow from the '082 teachings. For all these reasons, withdrawal of this rejection is respectfully requested.

The '071 Patent

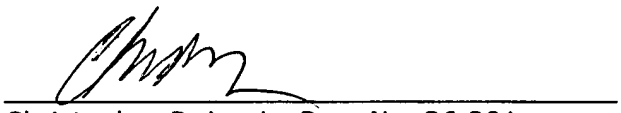
The '071 patent is directed towards ZSM-5 zeolite synthesis. The disclosed ZMS-5 zeolite synthesis method includes forming a reaction mixture of hydrogel at basic pH containing alkali or alkaline earth metal cations, an oxide of a trivalent element (such as Al), and an oxide of tetravalent oxide (such as Si). This reaction mixture is then mixed with an organic structure-directing agent and crystallized into ZSM-5. Similar to the '082 patent, the '071 patent fails to disclose step of contacting a formed silica hydrogel with alkali or alkaline earth metals. The '071 patent discloses that a silica hydrogel is formed in the presence of alkali or alkaline earth metal cation sources (column 2, lines 4-20).

Because the '071 patent does not "make clear" that impregnation of a washed silica hydrogel with alkali metals or alkaline earth metals is necessarily present in the described zeolite synthesis such that it would be so recognized by persons of ordinary skill in the art, this aspect of the present invention is not inherent to the zeolite synthesis described. Withdrawal of this rejection is respectfully requested.

Accordingly, neither of the applied references disclose or teach a method of for making a catalyst that includes impregnating a formed silica hydrogel with alkali or alkaline earth metals, therefore the references fail to disclose, either alone or combined, the elements of claim 1. Claims 2-17 and 20 each depend, either directly or indirectly from claim 1, and are all allowable over the cited references. Claim 18, from which claim 19 depends, similarly recites a method for making a catalyst involving a step of impregnating a formed silica co-gel with alkali or alkaline earth metals. Accordingly, claims 18-19 are also allowable over the cited references for the reasons above.

The rejections under 35 U.S.C. § 103 should be withdrawn. Favorable action is earnestly solicited. The Examiner is invited to call applicant's undersigned representatives if any further action will expedite the prosecution of the application or if the Examiner has any suggestions or questions concerning the application or the present response.

Respectfully submitted,



Christopher R. Lewis, Reg. No. 36,201
Pamela D. Politis, Reg. No. 47,865
Attorney and Agent for Applicant

PDP/

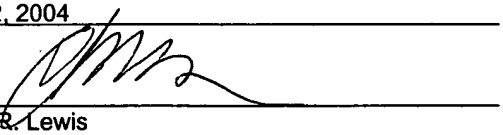
Dated: September 2, 2004

P.O. Box 980
Valley Forge, PA 19482-0980
(610) 407-0700

The Commissioner for Patents is hereby authorized to charge payment to Deposit Account No. **18-0350** of any fees associated with this communication.

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail, with sufficient postage, in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on:

September 2, 2004
Date



Christopher R. Lewis